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Hurricane Harvey and the Oil Industry

August 31, 2017

Hurricane Harvey has had a significant impact on oil industry infrastructure, and, therefore, the ability of the industry to supply petroleum products to the national and world markets at stable prices. All stages of the oil/petroleum product distribution chain, including production fields, refineries, pipelines, and harbors and ship terminals, have been affected. Over the next several days, damage assessments will continue and estimates of when normal operations will commence will become available. Hurricane Harvey has demonstrated the interconnectedness of the industry and how the shut-down of one, or more, parts of the production process can have effects that ripple through the chain.

Oil Production

Both onshore and offshore oil production were affected by Hurricane Harvey. Because of the physical proximity of the Eagle Ford oil fields to the hurricane's path it has been estimated that by August 26, 2017, Eagle Ford output, which pre-storm was 870,000 barrels per day (b/d), was reduced by 300,000 to 500,000 b/d. On August 31, 2017, it was estimated that 236,115 b/d of offshore production in the Gulf of Mexico had been curtailed, out of a total pre-storm production of 1,750,000 b/d. In addition, 94 out of 737 manned platforms and 5 out of 31 manned rigs remained evacuated. These output reductions potentially affect the ability of domestic refineries to access crude oil supplies, as well as international markets that might wish to purchase Eagle Ford light-sweet oil. However, for U.S. refiners the production cuts will not have an immediate impact due to refinery closures.

Refineries

While the onshore and offshore oil production cuts are problematic for the industry, they are consistent with the disruption to Gulf Coast refineries. As of August 31, 2017, it was reported that 10 refineries in the region were shut down. This total represents about 31.7% of Gulf Coast capacity and 16.6% of total U.S. refining capacity. Six of these refineries are in the process of restarting, which might take days or weeks pending final damage assessments. The refineries that are known to be restarting have a capacity of 1,269,720 b/d, or about 13.1% of total Gulf Coast refining capacity.

While these cuts in available refining capacity will have an effect on Gulf Coast gasoline and other local petroleum product markets, the effects are likely to be far more widespread. The Mid-Atlantic, Northeast, and Midwestern gasoline and other petroleum product markets are all net consumers of Gulf Coast production. As a result of this dependence, it is expected that gasoline, diesel fuel, and other products will increase in price in those markets.

Refineries, as well as other facilities, close when a storm threatens to result in physical damage to facilities from wind or water, when raw material supplies are disrupted, when electric power is not available, or when workforce safety is in question. The extensive flooding in the Houston area has damaged residential areas and made movement around the city difficult, likely increasing the importance of workforce issues, even if physical refinery damage is limited.

Ports and Waterways

Hurricane Harvey resulted in wide-spread port closures and restricted operations. As of August 31, 2017, ports at Freeport, Galveston, Houston, and Texas City were in recovery, while Corpus Christi, Beaumont, Lake Charles, Nederland, Orange, Port Arthur, Port Neches, and Sabine Pass were all closed. Other ports are operating with restrictions, or on a limited basis.

It was reported that the U.S. Coast Guard stated that it might be weeks before the Houston Ship Channel could be opened to allow large ships. In addition to the need for calmer waters, the Coast Guard must assess whether there is debris in the Channel, as well as whether there is sufficient water available in the Channel to accommodate large ships.

Imported crude oil arrives at the Gulf Coast refineries from Saudi Arabia, Venezuela, Mexico, and other nations by tanker. If the Texas refineries remain offline, or are unable to accept deliveries of oil by tanker, those countries will have to make alternative arrangements to include holding tankers offshore, or temporarily suspending shipments to the United States.

Pipelines

A key pipeline closure took place on August 31, 2017, when the 5,500 mile Colonial petroleum product pipeline from Houston to New Jersey was shutdown. The closure of the pipeline may transport price effects of Hurricane Harvey from the Gulf Coast to Southeast, Mid-Atlantic, and Northeast gasoline markets. The primary reason for the closure was the lack of products flowing into the pipeline at the Houston end. This indicates that the pipeline cannot reopen until ships can deliver crude oil to the refineries through the ports and waterways and refineries can resume operation.

Strategic Petroleum Reserve

On August 31, 2017, the Department of Energy (DOE) announced the release of 1 million barrels of crude oil from the Strategic Petroleum Reserve (SPR) West Hackberry site to a Phillips 66 refinery in Lake Charles, LA, via pipeline. The refiner is to restore the oil, as well as a premium, to the SPR at a later date. In addition to the four crude oil SPR facilities in Texas and Louisiana, the DOE operates the Northeast Gasoline Supply Reserve of about 1 million barrels which is held in the New York Harbor area, Boston, and Maine. The gasoline reserve was established after Hurricane Sandy in 2012. This reserve could be tapped should the closure of Houston area refineries and the Colonial pipeline result in sharp gasoline price increases, or physical shortages in these consuming markets. Senator Markey (MA) has called on DOE to release gasoline from the reserve.

Chemical Plants

On August 31, 2017, explosions and a fire were observed at a chemical plant in Crosby, TX, operated by the French firm Arkema. The plant was evacuated, along with residents in a mile-and-a-half radius around the facility. The plant contained stocks of highly flammable and potentially toxic chemicals that required

refrigeration for safe storage. When the plant flooded, refrigeration units failed, leading to explosions and fires.

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